

CLAIMS:

1. A process for manufacturing a lightweight, high bulk coated paper, comprising the steps of:

- 5 (a) creating a fiber furnish comprising mechanical pulp and chemical pulp;
(b) forming a paper web from the fiber furnish;
(c) removing water from said web;
(d) applying a coating having a weight of at least 2.0 pounds per 3300 square
feet per side onto each surface of said web to form a coated web having a
10 moisture content greater than 5.5%, and a caliper greater than 2.6 mils;
(e) passing the coated web through two extended-nip calenders, with each
side of the paper facing a heated roll and treated with one of said calender
nips, and wherein each calendering nip is formed by a calender roll having
a surface temperature of at least 300° F and a backing shoe having a
15 width of at least 30 mm, the nip providing loading of at least 1000 pounds
per linear inch; and whereby the calendered paper has a caliper
preservation greater than 75%.

2. A process as in Claim 1 wherein said paper is No. 5 offset lightweight coated
20 paper.

3. A process as in Claim 1 wherein said furnish comprises at least 40%
mechanical pulp.

25 4. A process as in Claim 3 wherein said furnish comprises about 60 to 80%
mechanical pulp.

5. A process as in Claim 1 wherein said coating has a weight of 2.0 to 6.0
pounds per 3300 square feet per side.

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6. A process as in Claim 1 wherein said coated web has a moisture content greater than 6.5%.

7. A process as in Claim 1 wherein said coated web has a moisture content
5 greater than 7.0%.

8. A process as in Claim 1 wherein said coating comprises a hollow plastic pigment; a kaolin pigment; a calcined kaolin clay; a titanium dioxide pigment; a synthetic latex binder; and a synthetic thickener, or a co-binder including
10 carboxymethylcellulose or acrylic acid based or associative based thickeners.

9. A process as in Claim 8 wherein said coating also comprises precipitated calcium carbonate or ground calcium carbonate.

15 10. A process as in Claim 8 wherein said hollow plastic pigment is present in an amount of at least about 2% by weight of the total amount of pigment.

12. A process as in Claim 8, wherein said hollow plastic pigment is present in an amount of about 3 to 5% by weight of the total amount of pigment.

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13. A process as in Claim 8 wherein said kaolin pigment has a fine particle size distribution characterized in that at least 85% of said particles are less than 2 microns and at least 50% of said particles are less than 0.5 microns, based upon particle counting using a Sedigraph particle size analyzer.

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14. A process as in Claim 8 wherein said kaolin pigment has a platy morphology characterized as both fine and coarse particles having a shape factor greater than 15.

15. A process as in Claim 8 wherein said kaolin pigment has a platy morphology characterized as both fine and coarse particles having a shape factor of about 20 to 27.

5 16. A process as in Claim 8 wherein said kaolin pigment is present in an amount of at least 70% by weight of the total amount of pigment.

17. A process as in Claim 8 wherein said kaolin pigment is present in an amount of 80% to 100% by weight of the total amount of pigment.

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18. A process as in Claim 8 wherein said titanium dioxide is present in an amount of at least about 2%.

15 19. A process as in Claim 12 wherein said titanium dioxide is present in an amount of about 3 to 5%.

20. A process as Claim 1 wherein the coating is preferably applied using a blade coater or a metering size press.

20 21. A process as Claim 1 wherein the calender is a shoe nip calender, said shoe nip width being in the range of from about 40 mm to about 80 mm, and calendering temperature is at least 300° F, and nip loading at 1700-2400 pli.

25 22. A process as in Claim 1 wherein said calendered paper has a basis weight of 28 to 38 pounds per 3300 square feet and exhibits a 75 degree TAPPI gloss of 35% or above and a caliper of at least 2.15 mils.

23. A process for manufacturing a super high bulk, offset lightweight coated paper, comprising

- 30 (a) creating a fiber furnish comprising at least 40% mechanical pulp;
(b) forming a paper web from the fiber furnish;

- (c) removing water from said web;
- (d) applying a coating using a blade coater at coat weights of at least 2.0 pounds per 3300 square feet, per side onto each surface of said web to form a coated web having a moisture content of at least 5.5%; and
- 5 (e) passing the coated web through two extended-nip calenders, with each side of paper facing a heated roll and treated with one of said calender nips; whereby each calendering nip is formed by a calender roll having a surface temperature of at least 300° F and a backing shoe nip having a width of at least 30 mm, the nip providing loading of at least 1000
- 10 pounds per linear inch (pli), and whereby the calendered paper has a caliper preservation greater than 75%,

wherein the coating comprises:

- (i) hollow plastic pigment, in an amount of at least about 2% by weight of the total amount of pigment;
- 15 (ii) kaolin pigment in an amount of at least about 70% by weight of the total amount of pigment, said kaolin pigment having a fine particle size distribution characterized by at least 85% of said particles are less than 2 microns and at least 50% of said particles are less than 0.5 microns, and a platy morphology characterized as both fine and coarse particles having a
- 20 shape factor greater than 15, preferably 20-27;
- (iii) titanium dioxide in an amount of at least about 2% by weight of the total amount of pigment;
- (iv) calcined kaolin in an amount of at least 5% by weight of the total amount of pigment;
- 25 (v) synthetic latex in a concentration of at least about 12 or more parts by weight of the total amount of pigment;
- (vi) synthetic thickener in a concentration of at least about 0.05 or more parts by weight of the total amount of pigment; and

wherein the finished coated paper has a basis weight of 28 to 38 pounds per 33

30 square feet, exhibits a 75° TAPPI gloss of 35% or above, has a caliper of at least 2.15 mils, gives a 17-27% higher caliper, has up to 22% bulk improvement

relative to a supercalendered 30 pounds/3300 square feet LWC, and has improved brightness, opacity and printing gloss.